

Appl. No. 10/714,856
Amendment dated: January 23, 2008
Reply to OA of: September 25, 2007

REMARKS

Applicants have amended the claims to more particularly define the invention taking into consideration the outstanding Official Action. Applicants have amended claim 2, to remove the term "such as" and to place the grouping in proper Markush format. Claim 3 has been clarified and new claim 21 added to a more specific aspect as fully supported by the specification as originally filed. Applicants have canceled claims 15-20 from the present application without prejudice or disclaimer. Applicants submit that the claims now present in the application are fully supported by the specification as originally filed and no new matter is introduced.

Applicants note that claims 15-19 are withdrawn from consideration as being drawn to a non-elected invention, there being no allowable generic or linking claim. Accordingly, Applicants have canceled these claims from the present application. Applicants retain their right to file a divisional application at a later time.

The rejection of claims 2, 6 and 13 under 35 U.S.C. 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention has been carefully considered but is most respectfully traversed in view of the amendments to the claims and the following comments. The term "highly" does not lack a basis for comparison as used in the context of the claims and as would be understood by one of ordinary skill in the art to which the invention pertains. The word is used to describe the alkalinity or acidity of the a solution as would be understood by one of ordinary skill in the art. Moreover, the specification contains examples of represented solutions of materials and has knowledge of the pH scale which measures acidity to alkalinity from 0 to 14, with 7 being neutral. Accordingly, it is most respectfully requested that this rejection be withdrawn.

Applicants most respectfully submit that all of the claims now present in the application are in full compliance with 35 USC 112 and clearly patentable over the references of record.

The rejection of claim 20 under 35 USC 102(e) as being anticipated by Giannetti et al. has been carefully considered but is most respectfully traversed in view of the cancellation of the claim from the present application. Accordingly, it is most respectfully requested that this rejection be withdrawn.

The rejection of claims 1, 2, 4, 5, 8, and 11-13 under 35 USC 103(a) as being unpatentable over Giannetti et al. in view of Iwasaki et al. (6,234,362) has been carefully considered but is most respectfully traversed in view of the following comments.

The Giannetti reference discloses that the metallic titanium is subjected to anodic oxidation treatment. Applicants most respectfully submit that the Giannetti et al. reference clearly teaches to one of ordinary skill in the art in paragraph [0016] anodic oxidation treatment, in an electrolytic cell of which it represents the anode, in a bath made of an aqueous solution containing sulfuric acid, hydrochloric acid and hydrofluoric acid. This is contrary to the procedure of the presently claimed invention which takes place in a highly alkaline solution containing alkaline metal ions. There is no suggestion of this reaction condition in the Giannetti et al. reference. This is further to the differences already noted on page 4 of the Official Action between Giannetti and the presently claimed invention in that the substrate having a titanium film on the surface for anodic oxidation upon it is not discussed; the material of the substrate is not discussed; the titanium film being deposited by sputtering is not discussed and the titanium film being deposited by evaporation is not discussed.

These differences are said to be overcome by the teachings of the secondary reference to Iwasaki which is said to be that allows for increasing product yield. However, one of ordinary skill in the art would clearly understand that Iwasaki et al. relates to a method for producing narrow wires including titanium oxide of high crystallinity diameter of the order of nanometer, in particular whiskers of titanium oxide and there is no suggestion of preparing the thin film required by the presently claimed invention. Clearly one of ordinary skill in the art would not be motivated to use the technique described in Iwasaki to prepare a different form of titanium dioxide as narrow

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wires and combine it with the primary reference to arrive at the presently claimed invention. The necessary motivation is not in the prior art and common sense would suggest to one of ordinary skill in the art that the references are not combinable to achieve the presently claimed invention.

The Iwasaki reference discloses that a substrate coated by a Ti film is treated by anodic oxidation, wherein the anodic oxidation works to produce uneven surface morphology as mentioned in lines 63-67, column 3 and lines 42-45, column 8 of the specification, and the final product is titanium oxide after the thermal treatment as mentioned in line 49, column 8 of the same.

The technique and the final product that the titanium dioxide is formed on the Ti-coated substrate via the anodic oxidation are different and unobvious from those of the Iwasaki reference. For this reason, claims 1-2, 4-5, 8 and 11-13 should be patentable under 35 U.S.C. 103(a). Accordingly, it is most respectfully requested that this rejection be withdrawn.

The rejection of claim 3 under 35 USC 103(a) as being unpatentable over Giannetti et al. in view of Iwasaki et al. as applied to claims 1, 2, 4, 5, 8 and 11-13 above, and further in view of Gong et al. has been carefully considered but is most respectfully traversed in view of the amendments to the claims and the following comments.

Since claim 3 of the present invention has been amended to "said titanium dioxide is nano-granular structured", which is different from the titanium oxide "nanotubes" disclosed by Gong, claim 3 should be patentable under 35 U.S.C. 103(a). Accordingly, it is most respectfully requested that this rejection be withdrawn.

The rejection of claims 6 and 7 under 35 USC 103(a) as being unpatentable over Giannetti et al. in view of Iwasaki et al. as applied to claims 1, 2, 4, 5, 8 and 11-13 above, and further in view of Takahashi et al. has been carefully considered but is most respectfully traversed in view of the above comments. Accordingly, it is most respectfully requested that this rejection be withdrawn.

The rejection of claims 9 and 10 under 35 USC 103(a) as being unpatentable

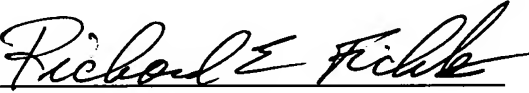
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over Giannetti et al. in view of Iwasaki et al. as applied to claims 1, 2, 4, 5, 8 and 11-13 above, and further in view of Minevski et al. has been carefully considered but is most respectfully traversed in view of the above comments. Accordingly, it is most respectfully requested that this rejection be withdrawn.

The rejection of claim 14 under 35 USC 103(a) as being unpatentable over Giannetti et al. in view of Iwasaki et al. as applied to claims 1, 2, 4, 5, 8 and 11-13 above, and further in view of Varghese et al. has been carefully considered but is most respectfully traversed in view of the above comments. Accordingly, it is most respectfully requested that this rejection be withdrawn.

In view of the above comments and further amendments to the claims, favorable reconsideration and allowance of all the claims now present in the application are most respectfully requested.

Respectfully submitted,
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